

REMARKS

Claims 1-4 and 8-10 are pending in this application. Claim 1 is independent. No claims have been amended, and claims 5-7 have been canceled. In light of the below remarks, favorable consideration and allowance of the present application is respectfully requested.

Rejections Under 35 U.S.C. § 103 – HATANO

Claims 1-4 and 8-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,740,192 ("*Hatano*"). This rejection is respectfully traversed.

In response to our previous Amendment (filed 8/28/2008), the Examiner alleges that *Hatano* can teach or suggest all limitations of claim 1. Specifically, the Examiner asserts that Example II-6 of *Hatano* teaches that "the nitride layers in this example were grown at temperatures higher than 650°C." (11/12/2008 Office Action, page 5).

Applicants respectfully submit that *Hatano* does not teach or suggest all limitations of claim 1. *Hatano* allegedly teaches in Example II-6 that the temperature of the sapphire substrate 101 is at 550°C when the GaN buffer layer 102 is formed, and then the temperature of the sapphire substrate 101 is raised to 1100°C when the n-type GaN layer 103 is formed. *Hatano* is said to further teach that the temperature of the sapphire substrate 101 is 800°C when the InGaN active layer 105 is formed, and further that the temperature of the sapphire substrate 101 is raised to 1100°C for the formation of the p-type GaN layer 106 and the p-type GaN layer 107. (*Hatano*, col. 16, lines 31-65 and FIG. 9).

Applicants submit that *Hatano* cannot teach or suggest the temperatures

required by the method of claim 1. Claim 1 recites “growing a first (Al,Ga)N layer over a substrate at a first substrate temperature within the range 850°C to 1050°C,” “cooling the substrate to a second substrate temperature lower than the first substrate temperature within the range 650°C to 1000°C...growing an (In,Ga)N quantum well structure over the first (Al,Ga)N layer,” and “heating the substrate to a third substrate temperature higher than the second substrate temperature within the range 850°C to 1050°C...growing a second (Al,Ga)N layer over the quantum well structure at the third substrate temperature.” Applicants submit that, because *Hatano* teaches the growth of GaN buffer layer 102 at a substrate temperature of 550°C, growth of the n-type GaN layer 103 at a substrate temperature of 1100°C, growth of the InGaN active layer 105 at a substrate temperature of 800°C, and that the p-type GaN layer 106 and p-type GaN layer 107 are grown at 1100°C, *Hatano* cannot teach or suggest the “first substrate temperature within the range of 850°C to 1050°C,” the “second temperature lower than the first substrate temperature within the range of 650°C to 1000°C,” and the “third substrate temperature within the range 850°C to 1050°C” recited by claim 1.

Applicants also note that Example II-6 is said to use an MOCVD method to manufacture the semiconductor laser 100, whereas claim 1 recites the growth of layers “by MBE.” (*Hatano*, col. 16, lines 1-2). Further, in Example II-4 where *Hatano* allegedly does employ an MBE method to manufacturing the light-emitting diode 70, the temperatures are said to be kept at 650°C for the deposition of the semiconductor layers on the substrate 71, in contrast to the limitations of claim 1 discussed above. (*Hatano*, col. 14, lines 3-22).

For at least these reasons, Applicants respectfully request that the rejection of claim 1 be withdrawn, and further that the rejections of claims 2-4 and 8-10 also be

withdrawn, at least by virtue of their dependency upon claim 1.

CONCLUSION

In view of the above remarks and amendments, Applicants respectfully submit that each of the rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley, Reg. No. 34,313 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKY, & PIERCE, P.L.C.

By

A handwritten signature in dark ink, appearing to read 'Daley', is written over a horizontal line.

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Handwritten initials 'ADK' in dark ink.